

**ADJUSTABLE DYNAMIC RANGE OPTIMIZATION FOR ANALOG TO  
DIGITAL RESOLUTION FOR INTELLIGENT FIBER OPTIC  
RECEIVERS AND METHOD**

**Abstract**

A receiver in a fiber optic system including an optical detector, an electronic circuit and an adjustment input circuit. The optical detector is configured to receive optical signals of varying light intensity. The optical detector has a dynamic range of sensitivity between a high optical intensity value and a low optical intensity value. The optical detector is also configured to convert the received optical signals into analog electrical signals proportional to the optical intensity of the optical signals. The electronic circuit is coupled to the optical detector and it is configured to receive the analog electrical signals from the optical detector. The electronic circuit also produces digital signals representative of the optical intensity of the optical signals such that the electronic circuit is configured with an original maximum digital value proportional to the high optical intensity value and an original minimum digital value proportional to the low optical intensity value. This defines an original receiver resolution between the original minimum and maximum digital values. The adjustment input circuit is coupled to the electronic circuit and is configured to allow the original maximum digital value to be adjusted to an adjusted maximum digital value. It is also configured to allow the original minimum digital value to be adjusted to an adjusted minimum digital value. This defines an adjusted receiver resolution between the adjusted minimum and maximum digital values.